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Background monitoring and spatial analysis of total organic carbon in groundwater in Qazvin plain

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Abstract

Background: Total organic carbon (TOC) is an indicator which presents water pollution via wastewater and organic pollutants including pesticides. TOC content in water presents organic matter and resulted that some countries use TOC as an indicator for assessing row water quality and water treatment facilities.

Objective: This study was done to determine total organic carbon concentration in groundwater resources in Qazvin plain.

Methods: Eighty-one water samples were selected randomly in arid and semi-arid climates in Qazvin plain in winter and spring of 2016. Sample stations were located in Qazvin, Takestan, Abyek and Buin Zahra cities. TOC analysis was done with SGE ANATOC™ Series II analyzer.

Findings: The average of TOC concentrations were detected 0.88, 0.68, 0.81 and 0.79 mg/L in Qazvin, Takestan, Abyek and Boin Zahra cities, respectively, with the mean of 0.79 mg/L. In addition, no significant relationship was found between land use and TOC concentration in groundwater.

Conclusion: The average of detected TOC in groundwater resources in the study area was lower than acceptable levels provided by the United States Environmental Protection Agency. The obtained results revealed that there were low potential for production of disinfection by-products in chlorination process. Low levels of TOC in water resources can be due to the performance of filtration and reduction processes.

Keywords: Total organic carbon, Qazvin plain, Drinking water resources

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